



QuikScanning work among different QuikScanners. The QuikScanner should consult with clients on their special needs and expectations, and sometimes she may need to negotiate on making the best of QuikScan.

In addition to training QuikScanners, meeting attendees need to be familiar with the QuikScan format in order to effectively use it for their benefit. In Chapter 7, “Implementation of QuikScan,” I include the material for reader training. In my empirical studies and pilot tests, all readers were able to satisfactorily complete reading training within two minutes.

6.2 Using QuikScan to Help Visually Impaired Readers

Whereas blind people once relied heavily on braille and audiotapes, today’s technology has enabled visually impaired readers to read the same documents read by individuals with normal vision. Text-to-speech software, or the “screen reader,” is an effective and widely used tool to help visually impaired individuals read text by having the text vocalized for them. These software programs can vocalize documents of many kinds including Microsoft Word and HTML pages. Widely used programs include JAWS, NaturalReader, ZoomText, and TextAloud.

One challenge encountered by visually impaired readers is that text-to-speech software reads a document in a linear and non-selective way (Juvina & van Oostendorp, 2006). Visually impaired readers, therefore, have to listen to the document being read sequentially and may waste much time on irrelevant and redundant information (Juvina & van Oostendorp, 2006). Juvina and van Oostendorp note: “This slows down the process and adds information load that much be handled

with users' limited cognitive resources" (p. 71). In addition, it also makes it highly difficult for visually impaired readers to locate goal-relevant information (Jones, Farris, Elgin, Anders, & Johnson, 2002; Juvina & van Oostendorp, 2006). Even when a document has an executive summary at the very beginning, the summary does not provide specific overviews to each local section and certainly does not enable visually impaired readers to search for specific details. In fact, not all summaries closely map the structure of the summarized text. Remembering what the executive summary says, amid a lengthy document, requires extensive use of cognitive resources. Accurately remembering the executive summary still does little in aiding information search.

Juvina and van Oostendorp (2006) point out that text-to-speech software needs to have "intelligence" to help visually impaired readers search for goal-relevant information.

Sighted persons have size, colors, position, shape, motion etc. as aids to discriminate between various types of information. Screen readers have only phonetic cues (e.g. male vs. female voice) and verbal cues (e.g. the word 'link' is added after each link). Moreover, there is no support in discriminating goal-relevant information from 'noise.' Information is presented serially and not in parallel as in visual interfaces. Visual and contextual cues are either absent since they cannot be translated in a textual form or difficult to retrieve because re-visitation is non-selective. Selective reading as an alternative to exhaustive reading would be a natural solution. This requires adding 'intelligence' to screen readers. An intelligent agent could be working together with the screen reader prompting the user with goal-relevant selections. (Juvina & van Oostendorp, 2006, p. 72)

QuikScan may not be exactly the same kind of "intelligence" in the minds of Juvina and van Oostendorp. But its potential in assisting visually impaired readers is significant. QuikScan can enable visually impaired readers to quickly grasp the gist of a document, read (listen) selectively, and search for specific content items.

The successful results obtained from the two empirical studies in reading comprehension and information seeking with normal, sighted readers (See Chapter 4) prompted me to investigate the effects of QuikScan on visually impaired readers. In this section, I first describe the use of QuikScan by blind readers who don't have any vision. To illustrate such use in a concrete situation, I present the findings from a blind student who read a QuikScanned document on the computer with the help of text-to-speech software. I then briefly describe the benefits of QuikScan for visually impaired readers who have a certain level of vision.

6.2.1 The Use of QuikScan by Blind Readers

Computer readers who are completely blind solely rely on text-to-speech software vocalizing texts for them. To investigate how these readers use QuikScan, I visited a blind individual, Zach, a University of Washington undergraduate who was employed as a consultant at the Access Technology Laboratory (ATL)¹⁷ at the University of Washington on February 15th, 2007. Zach worked with me in the capacity of a salaried consultant rather than as a research subject. Through this consultation, I intended to investigate the following questions:

1. Can a blind reader differentiate QuikScan elements from the main body of text?
2. Can a blind reader read selectively and skip sections in a QuikScanned document?
3. Can a blind reader search for content items in a QuikScanned document?

¹⁷ <http://www.washington.edu/computing/atl/>

4. Will a blind reader find QuikScan useful?

Using JAWS on a computer, Zach first read a QuikScanned document (Microsoft Word) for approximately 15 minutes and then read a HTML version of the same document. In Word, he was able to quickly understand the function of QuikScan summaries and differentiate these summaries from the rest of the document. When encountering a Boxed Summary, JAWS reads: “table [number], uniform table, column one of one, row one of one, one brace.” Blind readers are immediately informed that they are listening to a summary. I was greatly gratified to observe that Zach, using the Boxed Summaries in conjunction with Word’s Find feature, was able to quickly jump to the sections of the text he was interested in. On the HTML version, he successfully used the hyperlinked summary items to locate particular content items in the main body of text. He noted that the numbers in the summaries helped him search for the same numbers in the main body of text to get a full description of the summarized items. Table 6.1 shows Zach’s comments and suggestions.

Zach’s experience reveals the great potential of using QuikScan to help visually impaired readers. If QuikScan can be very valuable for textbook readers in general, as one participant in the empirical studies mentioned, then it can be even more valuable for visually impaired students who read textbooks on the computer. In Chapter 8, I suggest some ideas to further study the effectiveness of QuikScan in helping visually impaired readers.

Table 6.1 Quotes from Zach¹⁸

Comments	Suggestions
<i>“This is really cool.”</i>	<i>“I expected it to be in two different files. There is no trouble in opening up two files.”</i>
[Talking about HTML] <i>“I like the curly brackets here, just for consistency.”</i>	<i>“Make [No.] 4 a link back up to the summary.”</i> [Talking about the HTML]
<i>“Oh, that’s cool, it worked.”</i> [Speaking about the jumping between the summary and main text in HTML]	<i>“If the numbers getting big, I don’t mind. I would prefer that rather than being ambiguous.”</i> [Commenting on the reuse of the same numbers in the summaries]
<i>“I would definitely use it. It’s extremely valuable.”</i>	
<i>“I like to have summaries to keep a global perspective.”</i>	[Instead of using “}” all the time, maybe use “{1” in the summary, and “1}” in the document. This is especially helpful for blind people. “}” could be troublesome if it confuses with the same symbols in the document.]
<i>“The coolest thing is it creates a link between what’s going on locally and what’s going on globally.”</i>	
<i>“I could implement the system myself.”</i>	[Normal average screen reader doesn’t read color, or at least not obviously available. But JAWS does read underlining.]
<i>“JAWS loves to read heading structure. The more hierarchical, the better.”</i>	
<i>“Extremely valuable for math texts with 10 pages of theorems.”</i>	[Regarding highlighting, JAWS reads “black on yellow” to distinguish from “black on white.” However, there is no way to search for the highlighted part. The reader has to know where the highlighting is in order to read it.]

¹⁸ Quoted with permission; italicized information refers to direct quotations while the information in braces explains Zach’s words or paraphrases Zach’s meaning.

6.2.2 The Use of QuikScan by Readers with Partial Vision¹⁹

QuikScan can potentially help visually impaired readers, who have some vision, to grasp the gist of a document more effectively and search for information more efficiently. A number of programs such as NaturalReader and ZoomText help make information stand out visually for these readers in a variety of ways. In NaturalReader, for example, the sentence being read is highlighted with a yellow background (Figure 6.1). The word being read is further highlighted with a dark background (Figure 6.1).

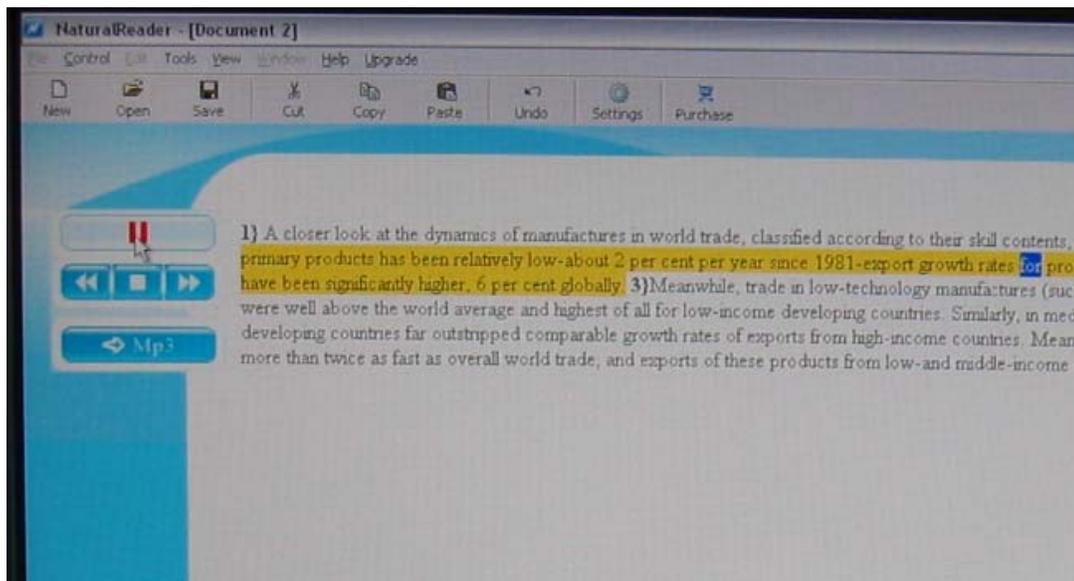


Figure 6.1 NaturalReader reading a QuikScanned paragraph

ZoomText enables readers to magnify the interface on the computer. Figure 6.2 shows a zoomed-in screen of a QuikScanned document in Word. Figure 6.3 shows a further magnified version. When zoomed, the QuikScan summaries, numbers, target

¹⁹ For the figures used in this section, pictures instead of screenshots are used. First, capturing screenshots was not feasible at the workstation. Second, because pictures show the computer monitor screen, it helps indicate the size of the zoomed-in interfaces.

numbers, and color can potentially help visually impaired readers who have difficulties in distinguishing content items. Figure 6.4 shows a typical workstation for visually impaired readers in the Access Technology Laboratory at the University of Washington. The workstation has two keyboards: one used by regular users (left) and one designed for visually impaired users (right). The keyboard for visually impaired users is yellow with large bolded characters (Figure 6.5). Visually impaired readers can use the buttons to zoom the QuikScanned document on the computer screen.

QuikScan, therefore, holds great value both for completely blind readers who rely entirely on audio information and for partially sighted blind people who can use QuikScanned documents when the text has been magnified. Possibly, some blind readers will use both methods in tandem.

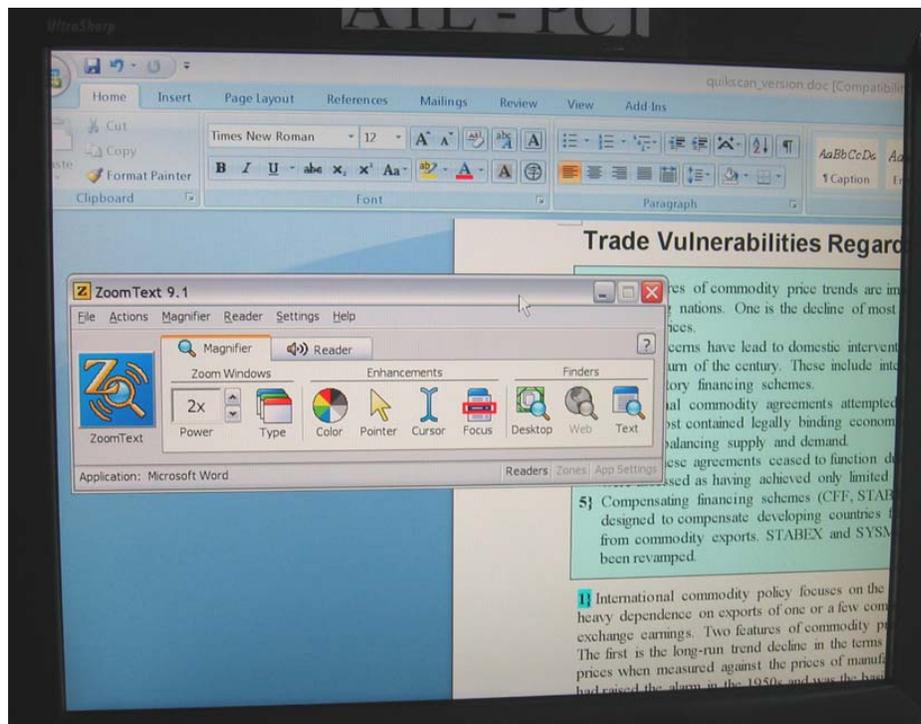


Figure 6.2 A QuikScanned document magnified by ZoomText

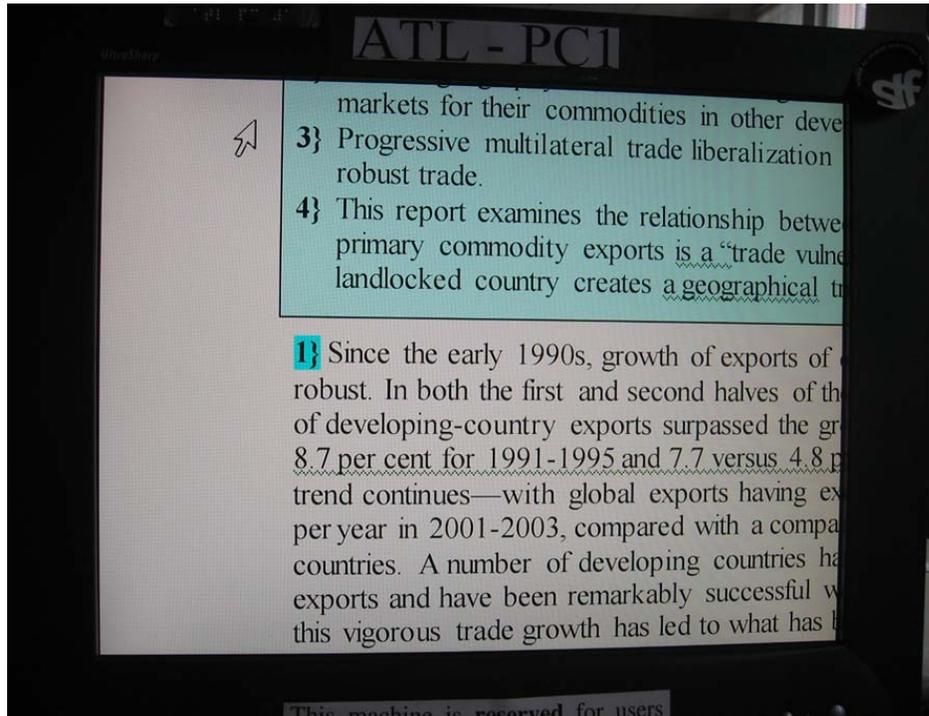


Figure 6.3 A QuikScanned document further magnified by ZoomText

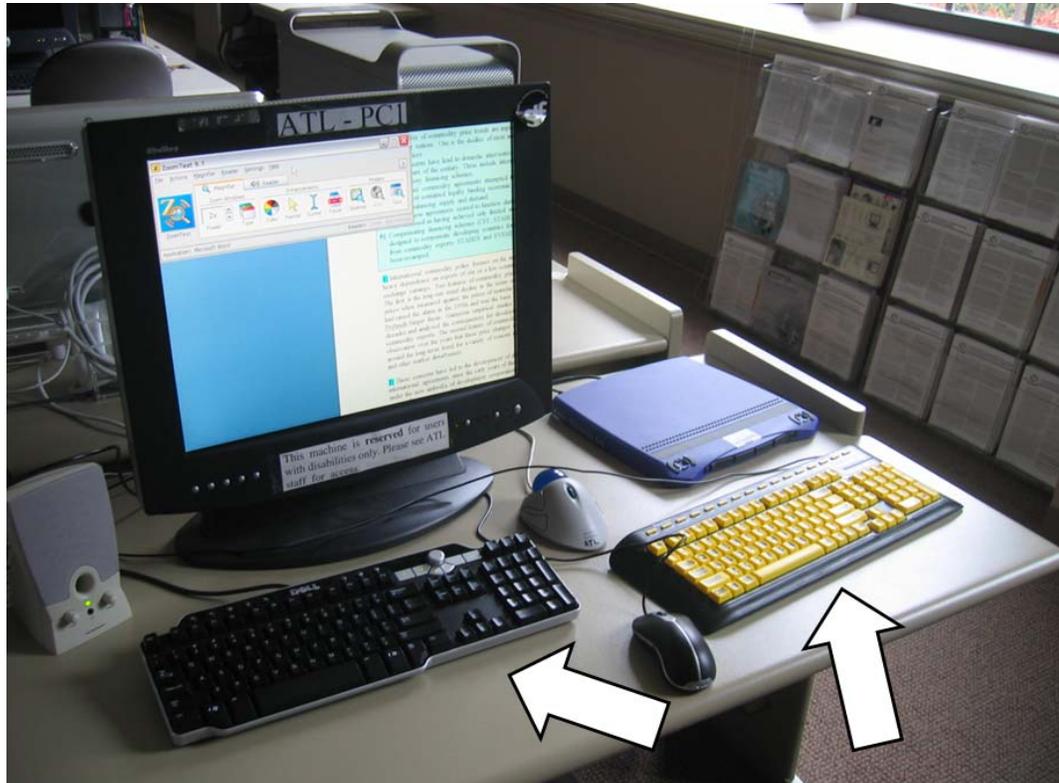


Figure 6.4 A workstation for visually impaired students



Figure 6.5 ZoomText keyboard

6.3 Applying QuikScan on Really Simple Syndication (RSS) Feeds

The Internet has become a major medium for accessing information. On the Internet, people are inclined to read quickly and selectively (Farkas & Farkas, 2002). Because the Web is a “non-sticky” medium, users tend to have less patience reading and searching for information (Farkas & Farkas, 2002). Web users expect to find their target information without having to process a large amount of less relevant information. While in the past users went to websites to get news and information, nowadays many of them subscribe to RSS (Really Simple Syndication) feeds to receive customized news reports, weather forecasts, scores of sport events, and so forth. Such feeds usually take the form of a summary that consists of the first couple of sentences of the actual news story. By reading the feeds, users can decide whether to pursue further for the complete story or to browse other content. Users can subscribe to RSS feeds using any RSS aggregator (e.g., Google Reader, Mozilla Thunderbird). Figure 6.6 shows the CNN.com U.S. news feed in Google Reader²⁰.

²⁰ www.google.com/reader

In this example, the summary is the first sentence of the actual news story on the most recent one of a series of earthquakes in southern Illinois.

The screenshot shows the CNN.com U.S. news RSS feed in Google Reader. The interface includes a header with 'CNN.com - U.S.', 'Feed settings...', 'Expanded view', and 'List view'. Below the header, there are buttons for 'Show: 325 new items - all items', 'Mark all as read', 'Refresh', and 'show details'. The main content area displays a list of news items. The top item, 'Another quake shakes southern Illinois', is expanded to show a summary: 'A 4.5-magnitude earthquake shook southern Illinois early Monday, the latest in a string of quakes that have rattled the region since last week, according to the U.S. Geological Survey.' Below the summary are social sharing options: 'Email this', 'Add to del.icio.us', 'Digg This!', 'Share on Facebook', and 'Stumble It!'. At the bottom of the expanded item are actions: 'Add star', 'Share', 'Email', 'Mark as read', and 'Add tags'. The list of items below includes: 'Two tornadoes strike metro D.C.', 'Fire burns Philadelphia warehouse', 'Cops: Teen could have quickly made bomb', 'Obama reports \$51 million to start April', 'ACLU weighs in on polygamist custody case', ''Forbidden Kingdom' takes top box office slot', and 'Obama, Clinton attack negative ads'.

Figure 6.6 CNN.com U.S. news RSS feeds in Google Reader²¹

Because RSS feeds are mostly used for quick browsing, they should contain just essential information. Unfortunately, very often the summaries in the feeds do not provide an adequate preview of the gist of the story. QuikScan can be used to supplement such feeds. QuikScan summaries convey rich information that is much more useful than a conventional RSS feed. First, even if a conventional feed contains several sentences, they are still just the introductory sentences that might not be very revealing. In contrast, the QuikScan feed is a true summary. Second, unlike conventional feeds, each item in a QuikScan-enhanced feed can be hyperlinked with

²¹ Screen captured on April 22nd, 2008